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PINE BEETLE CONTROL IN THE JULIAN-PINE HILLS AREA

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Records show that during the past 30 years pine bark beetles have appeared sporadically in mountain areas of Southern California causing severe losses of Coulter and Ponderosa pines. These outbreaks have usually developed with a suddenness which caught the property owners and forest agencies off guard, so that the infestations had reached a peak before control measures could be started. Within two or three seasons after abnormal activity of the insects was noted, these infestations have subsided with almost equal abruptness. In most of these outbreaks the sudden increase of bark beetles that attack living trees was stimulated by obvious causes; in some cases by man's activity in cutting pines for logging, summer home developments, roads, and power lines; at times by the weakening of trees by fire injury; and in some cases drought or obscure natural causes have accounted for the outbreaks.

Important past outbreaks of which something is known are: Lake Arrowhead, 1921-22, following clearing for many new summer home sites; Dyche Valley in the Mt. Palomar district, following a fire; Crestline-Lake Arrowhead, 1938-39, following clearing of a reservoir site; Kenworthy, 1933-35, following a drought; and Julian-Pine Hills, 1939-40, following a fire in the Pine Hills. The most recent outbreak of this kind started in the Julian-Pine Hills area of San Diego County in 1946 following logging operations of several small mills. In addition to these are numerous local outbreaks for which no specific cause has been assigned. Control work has been carried on against most of these outbreaks of bark beetles in Southern California, especially in pine areas where summer homes are concerned.

The Julian-Pine Hills Outbreak of 1946-48

Early in the summer of 1946 it became evident that pine beetles were on the rampage again in this area of summer homes, small ranches, resorts, and public parks. Coulter pines were being killed or top-killed in large groups by pine engraver beetles. This damage greatly increased in 1947. Surveys in the late season revealed that an area of some 20,000 acres was involved, extending from Julian as far south as the Cuyamaca State Park. Several thousand trees were killed during the season by the engraver beetle (Ips confusus) and, although a minor factor in the infestation for 1947, the western pine beetle (Dendroctonus brevicomis) was becoming more active and infesting the bases of top-killed trees. This outbreak has been attributed to the increase of logging operations

in recent years in the Julian and Cuyamaca areas which created a large volume of green slash that served as a breeding ground for vast hordes of pine engraver beetles. These insects bred in the slash, greatly increased their populations, and then began their attack on standing green trees. The dry winter of 1946-47 and the subsequent dry summer undoubtedly increased the susceptibility of living pines to bark-beetle attack and they were easily overcome by the beetles that came out of the slash.

Control Work During Winter of 1947-48

This outbreak in the Julian area affected directly a large number of summer home and resort owners whose pines were being killed on highly valuable sites. These owners soon recognized the gravity of the situation and through the Julian Chamber of Commerce requested the State Board of Forestry and the Bureau of Entomology and Plant Quarantine to make an appraisal of conditions and to recommend action.

Recommendations were that control work be carried on during winter of 1947-48 to reduce the beetle populations by destroying the broods while they were overwintering in the infested trees. The methods recommended were to fell and burn the infested bark of trees containing insects overwintering between the bark and wood; or, if too hazardous to burn, to fell and apply toxic penetrating oils to the infested bark. This program was initiated in the fall of 1947 through funds contributed by the private landowners which were matched by funds contributed by the California Division of Forestry. Authorization was also given by the State to include control work in the Cuyamaca State Park, and this was carried on as a part of the general operation from December 1947 through March 1948. Technical supervision for the project was provided by the Forest Insect Laboratory of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, located at Berkeley, Calif.

This combined and organized effort resulted in the disposal of bark-beetle broods in some 2,250 infested poles and trees in the Julian-Pine Hills Area.

The immediate results were the elimination of a large part of thriving bark-beetle populations that infested the area and that carried the threat of even heavier losses in 1948. Unfortunately, the program fell short of a complete clean-up of all infested trees in the Julian Area before the season was so far advanced as to make further work ineffective.

The Situation in 1948

To check up on the results of the control work and carry on studies of the underlying causes of these bark-beetle outbreaks, the Forest Insect Laboratory detailed an entomologist to the Julian area during the season of 1948. Through repeated examinations and surveys, we now know with

certainty what has developed since the control program was completed. This information shows that up to August there was little indication of a repetition of the severe epidemic of 1947, but during September and October pine beetle broods began to reestablish their numbers and some group infestations started to develop. This undoubtedly was made possible by the long, dry season which further lowered tree resistance and gave the beetles fresh fodder for their attack. It now appears that the infestation of 1948-49 will be less than one-fifth that of 1947-48 in spite of the extremely critical tree growth conditions. For this benefit, the control work should be given due credit.

Prevention Program

Now, and for an indefinite period in the future, agencies interested in the Southern California mountain home and resort areas should maintain a continuing prevention program to avoid a return of damaging bark-beetle outbreaks such as occurred in the Julian area in 1947. A prevention program requires mainly that all possible steps be taken to dispose of infested trees and slash before the beetles build up into large aggressive populations; and that in the management and protection of these areas, practices be adhered to which will discourage the breeding up of infestations. The phases of such a program can be briefly stated:

1. Early detection of small infestations. Trees that are dying should be reported to State or Federal agencies which are concerned with the control of forest insect infestations.

2. Prompt control measures for any infested trees, logs, or slash that are found in or near accessible valuable areas.

3. Adherence to practices in improvement thinnings, right-of-way and lot clearings, wood cutting, and logging operations which will prevent green logs and slash from becoming a breeding ground for a great number of bark beetles.

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